CITY OF BERTHOLD COMPREHENSIVE PLAN

2019

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City of Berthold Comprehensive Plan

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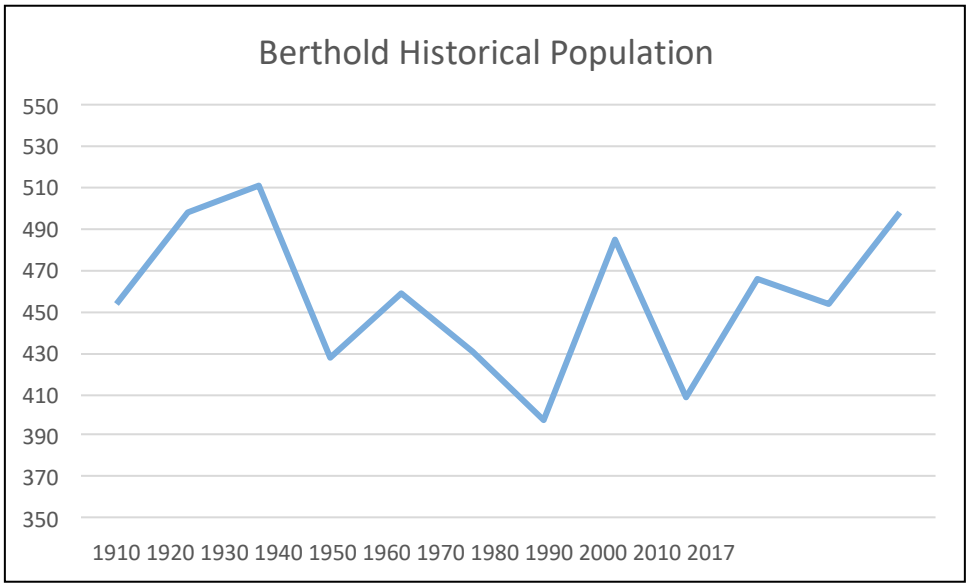
Community Profile

Berthold first became a city in 1900. The 1910 census shows at that time there were 454 residents. The population has fluctuated greatly over the next 100+ years, with a high of 511 residents in 1930 and a low of 398 residents in 1970. The most recent official census count was in 2010 which showed 454 residents.

The Census Bureau releases annual population estimates for all communities in North Dakota and estimated that in the year 2017 (the most recent estimate) there were 498 residents in Berthold.

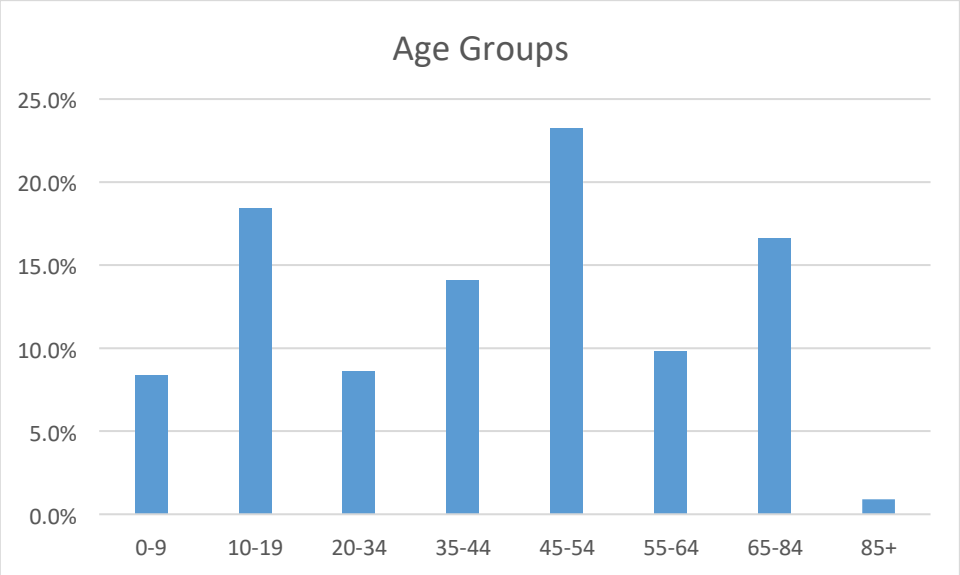
If these estimates are correct it would equate to an additional 44 people, or a 9.7 percent increase in seven years, or 1.4 percent annually.

Chart 1: Berthold Population



The average age of all Berthold residents is just over 45 years of age. That is relatively high compared to the county and state averages of 31 and 37 years respectively. However, if you take out the city of Minot the county average is much closer to the 45 years of age in Berthold.

Chart 2: Age Groups



In most of rural North Dakota the largest number of people are between the ages of 50 and 65, which have been coined the “baby boomers”. The age groups with the largest numbers in Berthold are the groups that represent the ages between 10-19 and 45-54.

Generally, communities where “baby boomers”, born between 1946 and 1964, are the prevalent age group, the communities are often losing population because they are statistically over the age to have children. Berthold’s population mix is dispersed across the age spectrum. Looking at the numbers, and Chart 2, you can see that the age groups with the largest number of people coincide with family staging, children (10-19), parents (45-54) and grandparents (65+). This information shows that there are few younger individuals, 20-34, that are at the ages people generally accumulate assets (spend money) and start families.

The numbers show that Berthold may be a generation past that with most of the people in the stage of their life that they are focused on supporting their families and not as focused on having children or accumulating assets. This is a common demographic trend in rural communities. It is important to note that nearly 28 percent of the citizens in Berthold are 19

years old or younger. Creating a community that invites them to stay provides an opportunity for the future growth of Berthold.

Living in Berthold

Residents of Berthold have a higher median household income (MHI) than the average income for the state and Ward County. The MHI for the city is $80,417. The MHI for the state is
$61,285 and Ward County's MHI is slightly higher at $64,159. Simple math tells you that residents of Berthold make over $19,000 more than the state and over $16,000 more than the county MHI.

Home prices in Behold are lower than the average for the state. According to the Ward County Office of Tax Equalization the median home value in the city is $154,000 compared to $174,000 at the state level. The average for Ward County is $189,000. Homes in Berthold have increased in value significantly in the recent past, rising from $92,100 in 2010 to an estimated
$154,000 in 2018. That equates to the median value of homes within the city increased in value by 64% during that time period.

For decades rural communities have had a difficult time seeing a reasonable return on investment when buying a home, but data shows that buying a home in the city of Berthold could be considered a good investment.

Berthold's housing stock is comprised almost exclusively of single-family homes. There are 194 housing units (structures) in Berthold, of which 160 are single family detached units. There are 7 twin-home structures, 11 multi-unit structures and 16 mobile homes.

The age of Berthold's housing stock is relatively low for a rural community with 80 percent of the housing units being built since 1970.

The housing vacancy rates in Berthold are very comparable to the state averages. Also, the average household size and family size nearly mirror the state averages. Berthold's average household size is 2.5 people per house and the states average is 2.4.

According to Census 2010 and 2017 estimates it is cheaper to live in Berthold than it is on average in the rest of the state and Ward County. The Census Bureau compiled data for selected monthly owner costs of homes with a mortgage and calculated it into selected monthly owner costs as percentage of household income (SMOCAPI). This shows the total cost of owning a home in Berthold is low and ultimately very affordable.

The Federal government has set a threshold number at 30 percent of your total income may be spent on housing to be considered affordable housing. A vast majority, nearly 87 percent, of Berthold residents spend less than 30 percent of their income on housing and 67 percent spend less than 20 percent. Along the same lines, 92 percent of renters spend less than 30 percent of their income on housing. Only 13 percent of homeowners spend over 30 percent on their mortgage and a very small 8 percent of renters fall above that threshold. This stands to reason with a higher than average income and very affordable housing values.

These numbers are significant in that a smaller portion of income being spent on housing leaves a greater amount for discretionary spending, which is needed to help a community (and existing businesses) grow and support new businesses.

The city limits of Berthold encompass approximately 866 acres with most of the land area being involved in industrial uses, with a smaller portion of developed land being used for residential development. The city is bordered on the north and east by ND Hwy 2 and on the south by County Highway 10 and 72nd Ave NW. The Burlington Northern Santa Fe Railway also runs along the south side of the city.

The development pattern is very traditional in nature in the center of town with a “checkerboard” pattern of blocks and streets. The block sizes are also traditional with most being 360 feet square from center line to center line of intersecting roads. This provides very good access for all forms of transportation throughout the entire city. The streets in the residential areas of town are approximately 20 feet in width without on street parking. Main Street is 60 feet in width in the downtown commercial district

and narrows to 40 feet on the north end. The road widths are sustainable and will help reduce the cost of future maintenance. Most residential blocks in the center of town do not have sidewalks installed which is normal for rural communities.

A smaller amount of land, mostly concentrated on Main Street, is occupied by commercial uses. Main Street is over 2,000 feet long with 1,100 feet, 3 blocks, developed as commercial uses.

There are lots that are not fully developed with some vacant buildings and empty lots. Infill development along Main Street is a sustainable short-term development option with little cost or risk to the city.

Future Projections

One of the most important components of a comprehensive plan is the future projections. In the Community Profile we looked at current conditions within the City of Berthold to create base line data which acts as a snapshot of what Berthold is today. Using current and historical data we can identify trends in population, housing, land uses, etc., which will help to paint the picture of what the future will look like for the City of Berthold. These projections will be the basis for the Goals and Objectives spelled out in the plan and the policies adopted by the city that will help guide Berthold to its desired future.

Over the past several years there have been multiple studies conducted by public and private organizations and institutions that aim to predict the future population, housing needs, employment numbers, etc., for cities and counties in ND. Most of these studies focus on western North Dakota due to the oil boom in the Bakken Formation being centered in far the west.

NDSU Projections

The NDSU Department of Agribusiness and Applied Economics published the Williston Basin 2016: Employment, Population, and Housing report in July 2017. This report looks at trends that affect population growth to forecast population through the year 2035.

The rate of population growth is calculated using different scenarios of low and high oil wells drilled in the Williston Basin. The report uses 600 new wells per year as a low scenario and 2,000 new wells as the high scenario.

Using the low scenario Ward County's population will increase by 6,260 residents over the 18- year period, or .5% annually. Using the high scenario, the population in Ward County would increase by 17,300 residents, or 1.2% annually.

As noted previously, the projections for the Minot Region and Ward County show an increase in both population and housing units through 2035. What does this mean for the City of Berthold?

As detailed in the Community Profile, Berthold has not seen any steady positive or negative trends that continue for multiple census cycles. However, from 1970 when the population was the lowest recorded since the city was incorporated, to the most recent estimate, 2017, the city has seen a population increase of 96 people, or 24.1%. Over that 47-year period that would equate to just over .5% annually.

Having increased in population since 1990, the City of Berthold began to grow prior to the "boom" in oil production in the Bakken Formation. A portion of the growth from 2000 and 2010 censuses may be attributed to the oil industry, but is not the underlying driver of Berthold's growth. Berthold's affordable housing and low cost of living along with its proximity to the City of Minot has served to very advantageous.

The NDSU study identifies the economy of the City of Minot and its surrounding areas as "robust" and less likely to be affected by the changes in the oil industry than the other study regions.

Population projections for the City of Berthold may or may not mirror the projected rates in these studies. The chart below represents three rates of growth; 1) the NDSU low projected growth rate of .5 percent; 2) the NDSU high projected growth rate of 1.2 percent (modest growth; 3) and a hybrid growth rate of .75%.

This plan will use the hybrid growth rate for future projections. The reason for this is it

is believed that the city is poised to take advantage of its current growth trend and has identified future growth opportunities.

Table 1. Growth Rate Projection

Rate\Year	2017	2019	2029	2039	2049	Total Inc.
NDSU low (.5%)	494	499	525	552	580	**86**
Hybrid (.75%)	494	501	540	582	627	**133**
NDSU high (1.2%)	494	505	569	641	722	**228**

While these numbers vary greatly, it is a good representation of why it is important to plan for a specific rate of growth. The amount of land for new developments, required housing units, city utilities, commercial services, etc. required to serve the amount of growth for these projections also varies greatly.

The total number of housing units needed to accommodate each growth rate is calculated below using the number of persons per household from 2017 census estimates. Table 2 shows the required number of permanent housing units required to support each growth rate using 2.5 persons/household.

Table 2. Required Housing Units/Growth Rate

Housing Units Rate\Year	2029	2039	2049	Total Units
NDSU low (.5%)	10	11	11	**32**
Hybrid (.75%)	16	17	18	**51**
NDSU high (1.2%)	26	29	32	**87**

With the addition of 133 residents at 2.5 persons per household, the total number of units required to house those residents is 51. There is no differentiation between single family units and multi-family units in this calculation. The persons/household rate for single family versus multi family is nearly identical so units are interchangeable.

Table 3. Land Required to Accommodate Future Growth

Acres/Time	2019-2029	2029-2039	2039-2049	Total Acres
NDSU low (.5%)	3.47	3.60	3.73	***10.80***
Hybrid (.75%)	5.33	5.67	6.00	***17.00***
NDSU high (1.2%)	8.53	9.60	10.80	***28.93***

Table 3 illustrates the amount of land the city will need for development every ten years to keep pace with projected growth in Berthold. This calculation presumes that all additional population will require new housing units and land. These numbers are calculated assuming 1/3 of an acre will be required for streets and utilities and 2/3 of an acre will be available for development. This equates to a typical single-family development with ¼ acre lots.

Chapter 2: Strategic Issues and Analysis

Throughout the comprehensive planning process information was gathered from city officials and a steering committee to gather information about the City of Berthold. The purpose of the steering committee meetings was to get information about the current conditions in the city and what, if anything, they believe community members would like to see improved and/or changed. Also, there were discussions on future development and the types, location, and densities of residential, commercial and industrial land uses.

The following are the issues that became the most prevalent throughout the process that were identified as shared concerns. These will be referred to as strategic issues throughout this plan.

Community Reinvestment and Redevelopment

The City of Berthold has grown, and for it to continue to grow into the future it will require new land to be annexed and developed. Before the point land needs to be annexed it is extremely important that there be an emphasis put on reinvestment and redevelopment within the existing city. Neighborhood revitalization policies will prove to be critical in keeping the existing neighborhoods attractive to current and future residents of Berthold. Infill development will serve to be an important tool that can help maintain and/or revitalize existing neighborhoods.

Berthold has in the past had an incentive to help new residential development. The city has offered a cash incentive to help with the cost of buying a property and/or help to pay off the cost of water, sewer, etc. that are extended to the home. This program was administered by Berthold Economic Development Corporation (BEDC). The city and BEDC should look at reinstating this program.

Main Street has transformed from the commercial center of the community to a strip of buildings and uses that no longer attract or perpetuate new commercial activity. A

reinvestment and redevelopment strategy focused on coordinating building types and uses on Main Street must be developed to revitalize the commercial and social core of the City of Berthold.

Property Maintenance

There are properties within the City of Berthold that have fallen into disrepair. With no adopted property maintenance code, it has proven difficult for the city to enforce proper care and upkeep of buildings and properties. This has resulted in properties in need of repair and maintenance. Residential and commercial properties that have been neglected do not portray the clean and friendly community image the city is striving for.

Infrastructure

The single largest expenditure most rural communities incur is the maintenance of its water lines, sewer lines and roads. The City of Berthold has been proactive in the maintenance of its infrastructure. Continued growth may put strain on the existing systems.

Prior to approving any new developments, the city must set policies for the timing and financing of major projects and how they will affect the existing infrastructure. This could be accomplished in the form of a Capital Improvements Plan that would locate infrastructure and identify existing conditions to examine what will be required to accommodate future growth.

For the city to develop any new land, it will require the annexation of additional land. The city does not currently have water rights outside of the current city limits. Negotiations with North Prairie Rural Water District must be had to assure water is available for all new developments.

New Growth

Based on the population projections in this plan and in other studies, the City of

Berthold is going to continue to grow which will require additional land to be annexed into the city. The projections this plan incorporates shows Berthold being a town of 627 residents in the year 2049. Assuming new developments will be denser than the existing development in Berthold, due to cost of improvements, that will require an additional 17 acres of residential land.

It is imperative that the city adopt ordinances to assure compatibility of current and future land uses. These ordinances should be written to follow the guidelines set forth in this plan.

Additional development requires additional infrastructure and additional cost. Policies must be created to assure sustainable development to minimize the cost to the city and its citizens.

The density and location of a development, along with its street widths and layout are ways to control the cost of a development and to assure its sustainability.

Housing

In conversations with city residents, the school district, and city officials, housing was a paramount issue that needs to be addressed. Housing availability within the city is extremely limited whether it is single family or multiple family units.

It was expressed that the lack of housing options may be stunting city growth and is also making it difficult for the school district and local businesses to recruit teachers and workers.

The conversations that were had also showed that the residents would like to see a variety of new housing options in future developments and that affordability must be a consideration for future housing options.

A mix of housing options such as apartments, townhomes, twin-homes, detached single family homes, etc. must be considered to meet the needs of current and future residents.

Infill Development

Infill development is the development of empty lots and parcels within existing neighborhoods. In many cases this is a cost-effective way of adding new homes and/or businesses and utilizing existing infrastructure. Infill development adds to the tax base by bringing new or improved property to the tax rolls. There are several vacant lots, both commercial and residential, that may be utilized for infill development. This relates directly back to community reinvestment and redevelopment.

Economic Development

A concern of the citizens of Berthold is the current business climate within the city. There are few businesses that offer day to day services. For Berthold to continue growing and to attract the type of resident that will invest in the city there will need to be a concerted effort on the city's part to attract and entice new business as well as supporting existing businesses.

Commercial development should be focused on Main Street and along Highway 2. Service retail, restaurant, offices, etc. should be concentrated on Main Street while convenience commercial, ag services, and typical highway commercial uses should be located along US Highway 2.

The city is currently is not involved in the states Renaissance Zone Program that includes property and income tax incentives for new construction and renovations and additions to existing structures within a specified zone. These programs are available for both residential and commercial properties and could serve as a useful tool for the city.

The city must develop an economic development strategy that will assist current businesses in growth and attract new businesses to Berthold. Coordination with Souris Basin Planning Council could serve as a useful tool in developing this strategy.

Chapter 3: Housing

The predominant current land use in the City of Berthold is residential development. It is very important to focus on what needs to be done to keep the existing housing stock adequate and to assure future residential uses are high quality and desirable developments that suit the needs of the existing and future residents of Berthold.

When looking at the future housing needs it is important to look at who is and who will be living in Berthold. Using the population numbers, we get a picture of who will be living here and the types of housing that are most desirable to the citizens of Berthold to set guidelines and policies for the city to follow regarding meeting housing needs.

Housing Needs Analysis

As established in the Community Profile, the largest adult age groups living in Berthold are between the ages of 45 and 54 years of age. This age group is in the phase of their lives that they are focused on providing for and raising children, supporting community organizations, and managing/growing businesses. This is the age group that has most likely purchased a single-family detached home, if they are going to, as their business and/or family lives were growing. Codes and policies must be created to assure adequate single-family housing options for current and future Berthold residents.

While not every person within this category will have children or wish to own a home, it is important that housing options be available to keep such persons in the community. Currently there are options available to someone looking to rent housing, but there is a very limited number of units. There is a greater demand for rental housing than the total units currently available. The city has identified this as an important issue.

In conversations with the steering committee, school district, and city officials it was

made clear that housing options and availability are extremely limited. This creates a situation that makes it difficult to recruit workers, and/or teachers, to the city. Both rental and purchase housing options must be available for the city to continue to grow.

Rental options such as condominiums, townhomes, and apartment buildings may help to meet the demand for rental housing. Additional rental housing helps a community deal with transitional populations. It allows people who may not currently have the ability to buy a home to live and work in a community. The concerns heard from the school district and local businesses about lack of affordable housing options may be eased with addition of these types housing.

One transitional portion of the population are older individuals who no longer able to, or want to, care for a single-family home, but do not want to leave the community. To keep these individuals in the community there must be adequate rental housing available specifically geared towards their lifestyle.

It is important for communities to have a good mix of rental and owner-occupied units. The higher the number of homes that are being rented means there are fewer homes available for sale to new residents. Without multi-family rental units available it will presumably, over time, keep new residence from moving to Berthold.

Low-income Housing

The City of Berthold does currently have a low-income senior housing development that serves a segment of the rental market. However, the segment of the housing market that is not currently served within the City of Berthold is housing geared towards the needs of senior citizens that do not qualify as low-income earners. With nearly twenty-five (25) percent of residents ages 55 and up it is important to offer the type of housing geared towards seniors to keep this population in Berthold.

Senior housing is generally geared towards aging population by offering smaller, or no, yards, few steps, handicap accessibility, minimal yard maintenance and smaller unit

sizes. In the State of North Dakota this is the second largest age group and must become a priority for the City of Berthold to assure that housing is available to all income levels to serve the current and future senior housing need.

Affordability

Housing in the City of Berthold is considered affordable, based on the Federal Governments definition of spending thirty (30) percent or less of your income on housing. However, the City of Berthold must make it a priority to keep housing affordable by creating codes and policies that allow for a variety of housing options that meet the demands of the market and the desired housing types of its citizens.

Chapter 4: Utilities and Transportation

Maintenance of public utilities and transportation facilities is a constant challenge for communities. These utilities are required services that a city must provide to its citizens and are the life blood that keeps it alive and growing. It is a challenge to keep up with infrastructure needs in both repair and budgeting. It is critical to stay on top of these needs to ensure the long-term growth of Berthold.

The City of Berthold contracted with Moore Engineering to complete a Capital Improvements Plan (CIP) to survey the current condition of the sanitary sewer, water utilities and streets to help guide future investments and budgeting. Along with this Comprehensive Plan, the CIP will serve as a guide for the city to make educated fiscal decisions for the growth of the city. The Capital Improvements Plan is added to this plan as Appendix 1.

Public utilities that are provided by the by cities consist of water, sanitary sewer and storm sewer. The utilities provided by the City of Berthold are sanitary sewer, water and storm water management.

The sanitary sewer system consists of pipe, three (3) lift stations and a 4-cell treatment lagoon. Water is provided through an agreement with North Prairie Rural Water District and consists of water lines, water mains, and a 50,000-gallon water tower. The storm water runoff is handled through a ditch and culvert system.

Sanitary Sewer

The original sewer pipes for the entire city were installed in 1958. At this time Berthold installed clay pipe which was the most common material for sewer pipe. Over time clay pipe has proven to be reliable, but susceptible to cracking and shows deterioration over time. Most of the existing pipe is clay. All new pipe that has been installed since 1982 has been PVC pipe. The system consists of both gravity sewer and force main. The city added lagoon cells to accommodate additional wastewater in 2014. There are three sanitary lift

stations in the city. According the CIP, the lift pumps are in good condition, but do require routine maintenance.

These additions and upgrades to the system have helped to increase the capacity of the existing system. However, depending on the condition of the older clay pipes it is necessary for the city to look at the necessary steps to replace the clay pipes with new PVC. Moore Engineering has addressed this in the attached CIP.

City Water

The city currently has 256 water users on their system. Most of the distribution system was installed in 1960 and is ACP, asbestos cement pipe. New pipe installed after 1982 is PVC pipe.

The water system is operating with limited major issues in recent years, but according to the CIP there is a significant amount of water lost to leaks in the system. In 2017 the amount of water metered by NAWS was 14,378,720 gallons and the amount of water metered by the city was 9,539,717 gallons, a difference of 4,839,003 gallons. With that number of gallons bought by the city but not able to be billed to users the city is losing money every year this continues. The data used for the CIP has identified this issue and contains recommendations for fixing the problem.

For a more detailed description of the current conditions and future proposed improvements to the city's utility infrastructure please see Appendix 1.

Transportation

Existing Network

The streets in the city are developed in a traditional checkerboard pattern, which provides good access for all forms of transportation throughout the entire city. While Berthold continues to grow it is important to maintain the existing roadways to increase their serviceable life. The attached CIP identifies ways this can be done to reduce the cost of maintenance to the city.

Major roadways that act like collector roadways in the city are Main Street, Fourth Ave NE and Central Ave E. The remainder of streets would be considered local or residential streets that provide access to residential areas.

The streets in the residential areas of town are approximately 26 feet wide which is a manageable width for residential streets without curb and gutter. Any new developments should have similar right-of-way and road widths unless developed with curb and gutter.

Future Development

Future developments in areas shown in this plan may have certain restrictions to the type(s) of housing due to the depth of existing sewer in areas that are gravity fed. However, if feasible, a lift station would allow more flexibility in type of housing and density of homes.

It is important for the city to identify areas for future improvements for the city to continue to grow in areas identified in this plan.

Chapter 5: Economic Development

According to survey results there is concern about the current business climate in the city of Berthold. With few service businesses in the community, the sales tax revenue generated from these businesses is minimal. The city must develop an economic development strategy that will assist current businesses in growth and to attract new businesses to Berthold.

A focused effort to attract retail and service businesses that provide semi-essential services such as groceries, financial services, health services, etc. is what survey respondents would like to see in Berthold.

Berthold's Economic Development Tools

The city has passed a 1% increase in sales tax for economic development that goes to fund infrastructure improvement projects and public property maintenance. These funds have been utilized for the upkeep of city streets and sewer and water improvement projects.

The city has an economic development corporation that is tasked with selecting projects the ED funds are to be used for. While these taxes are currently earmarked for public infrastructure projects, the city should evaluate the expansion of the types of projects or programs these funds may be used for.

The establishment of an economic development program focused on enticing new people and/or businesses to locate in Berthold would be a beneficial use of city tax proceeds. Increasing the number of businesses in the city would increase both property tax and sales tax collections. These additional taxes could then be allocated back to both the infrastructure maintenance and ED programs, essentially paying for itself by increasing the total tax receipts.

The city is not currently enrolled in the State's Renaissance Zone Program. The Renaissance Zone program is a property and state income tax incentive created to

entice improvements within an established zone. The Renaissance Zone program is multi-faceted in that incentives are available for new construction, building rehabilitation, building purchase, whole or partial building lease, required infrastructure improvements to accommodate a project and any combination of eligible projects within the zone. The property and state income tax incentives are available for a maximum of five years and may be full or partial tax exemption or credit. The City of Berthold could benefit greatly by being enrolled in this program. It is an economic development tool that costs the city little to nothing.

Regional Economic Development Tools

Ward County is in North Dakota Planning Region 2 and is a member of the Souris Basin Planning Council. The planning council administers two ED programs available to businesses located in Berthold. The Souris Basin Planning Council may serve as a valuable resource for the city to reach its economic development goals.

- **Souris Basin Planning Council Revolving Loan Fund** was established with grand funds from the US Economic Development Administration Title IX program and the MAGIC Fund of Minot to assist in the creation of permanent private sector jobs.

  Funds are available to private developers, development groups, and a city or county involved in an economic development project. Funds may be used to acquire and/or improve land or buildings and upgrading equipment and inventory.

- **Intermediary Relending Program** was established with a long-term low interest loan from USDA-Rural Development and grant from the Magic Fund in Minot. This program is available for a wide range of business activities from feasibility studies to land and building costs.

State Economic Development Tools

There are additional programs available through the State of North Dakota that are available almost solely to primary sector businesses. A primary sector business is a business that makes

direct use of natural resources. These industries include agriculture and oil and gas extraction and processing. These industries are two of the largest drivers of Berthold's growth. It is important for the city to understand what ED programs are available to capitalize on potential economic opportunities. The Bank of North Dakota administers several financing programs geared at these industries.

- **Exemption of Improvements to Buildings** is a state program (NDCC 57-02.2) that offers property tax exemptions for residential and commercial building improvements. The exemptions are allowed for the value of the improvements only. Exemptions may be for a maximum of five (5) years but is subject to review by local jurisdiction that may reduce the length of time. Buildings must be at least 25 years of age and in need of improvement.
- **The PACE (Partnership in Assisting Community Expansion) Program** is designed to encourage primary (and related) sector economic activity in North Dakota by providing interest buy downs that reduce the interest rate on borrowed money by up to five (5) percent.
- **The Flex PACE Program** provides interest buy down to borrowers that do not fit directly into the PACE Program. Under this program, the community determines eligibility and sets accountability standards used to gauge benefit to the community. This program can be used for job retention, retail, and essential community services.
- **The Business Development Loan Program** is designed to assist new and existing businesses in obtaining loans with a higher degree of risk that would not be acceptable to traditional lending institutions.

The North Dakota Department of Commerce also administers multiple ED programs.

- **The North Dakota Development Fund** provides "gap financing" to primary sector businesses through loans and equity investments when they are unable to obtain full financing from traditional lenders.
- **The Regional Rural Revolving Loan Fund** provides funding to primary sector projects

in communities of less than 8,000 in population.

- **The Agricultural Production Utilization Committee (APUC)** administers a grant program that provides funding to new and expanding uses of North Dakota agricultural products. Grants are available for basic and applied research, marketing and product utilization, farm diversification, and agricultural prototype development.

There are additional tax incentive programs available through the state that are regulated by state law and administered and reviewed by the Tax Commissioner's office. These are tax increment financing and PILOT (payment in lieu of taxes). These programs both use property taxes to pay infrastructure improvement costs for new development.

Creating an Economic Development Toolbox

For Berthold to continue growing and to attract the type of resident that will invest in the city there will need to be a concerted effort on the city's part to attract and entice new people and business, as well as supporting existing businesses. Coordination with Ward County's Community Development Coordinator could serve as a useful tool in developing this strategy.

A combination of a city ED program, the Renaissance Zone Program is a strong foundation the City of Berthold could utilize to improve the current business climate to support current and future growth.

The City of Berthold needs to prioritize economic development to support the residential growth the city is already experiencing. A redevelopment and reinvestment program should be developed for Main Street that identifies the types of businesses and buildings the city wants to see in their downtown. The city must create and adopt a zoning ordinance that regulates the types of uses and yard requirements to assure the development on Main Street is structured to allow land uses that are compatible with the city's plans.

Chapter 6: Land Use

City of Berthold Land Uses

The land use plan is composed of a land use plan map and land use category descriptions. The goal of the land use plan is to provide a general pattern for the location, distribution and character of future land uses. This plan is a guideline document that sets the type and location of uses that will be allowed within the City of Berthold and identifies areas for future growth.

Agricultural

The agricultural designation identifies areas outside of the city that are not identified in the plan as areas of future development. It is intended for these areas to remain as agricultural uses without interference of future development activities that may affect its operation.

Low Density Residential

This designation identifies areas to be used for single family detached homes and twin homes. These areas will be separated from commercial and industrial uses to promote a safe neighborhood environment. Density for this LDR is up to 8 units per acre for detached units and up to 10 units per acre for attached single family units. Low density residential units must have direct access to an approved public or private right-of-way.

Medium Density Residential

This designation identifies areas to be used for 3+ unit attached single family units such as condominiums, townhouses, and smaller apartment buildings. These structures may have up to 8 units per structure and be up to two stories in height. Density for this use is up to 12 units per acre. Medium density residential units must have direct access to an approved public or private right-of-way.

Commercial

The Commercial designation provides areas for retail, service, and office uses. Commercial areas are to be located along Main Street and US Highway 2, or County Hwy 10. New commercial uses along MainStreet should be developed in the same pattern as current buildings, with a zero-front setback, or built up to the sidewalk.

Heavy Commercial

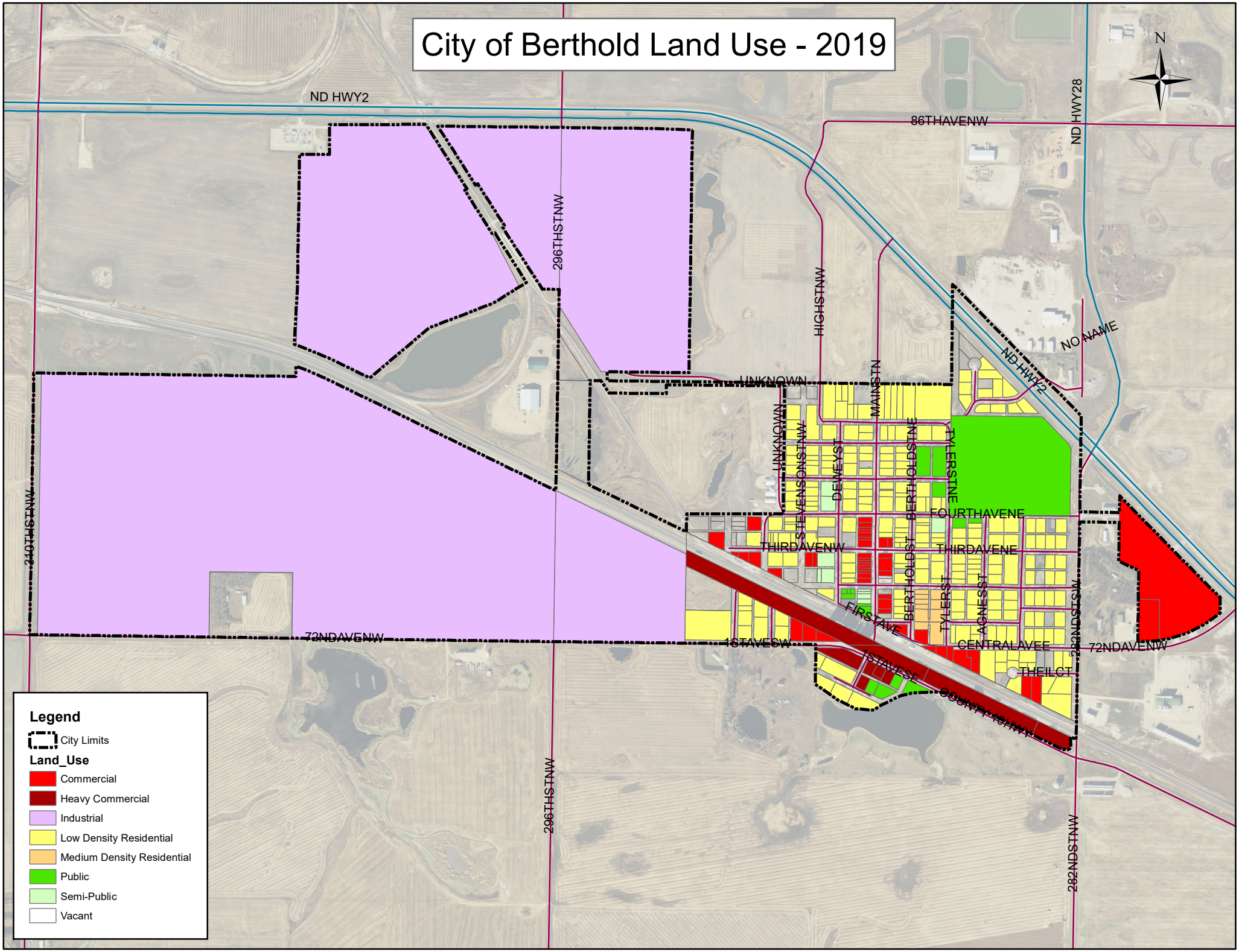
The heavy commercial designation provides areas for uses that have minimal retail traffic. Uses that buy and sell bulk products and provide off site services are the type of businesses in this designation. It provides for uses in locations which are suitable and appropriate taking into consideration land uses on adjacent or nearby properties, access to a major street or highway, and access to public utilities.

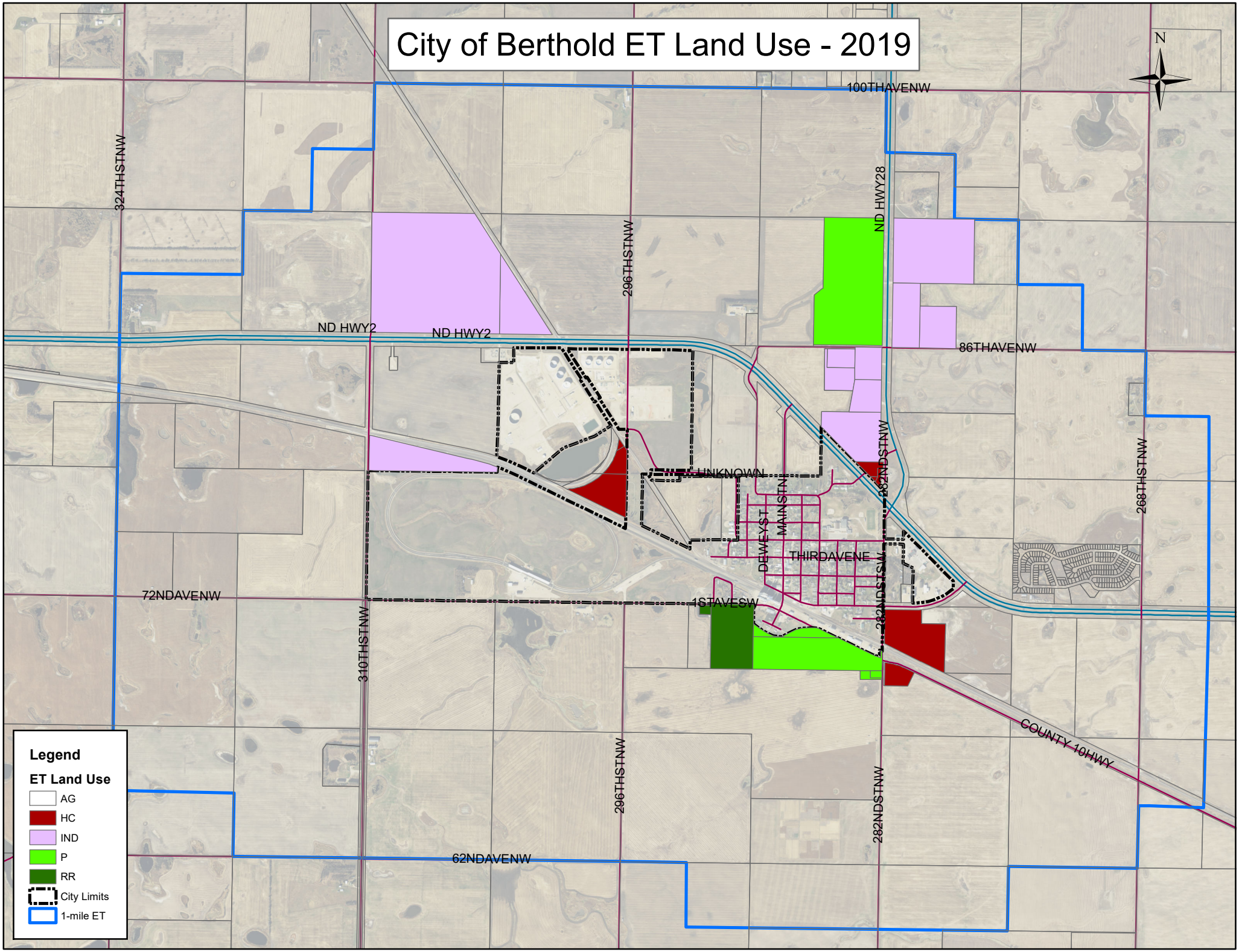
Industrial

The industrial designation provides areas for uses that manufacture, assemble, and distribute goods and provide services that require the use of heavy machinery and outdoor storage of materials. These uses may not be compatible with other land uses due to their nature of operation and must be separated from other uses. If this is not possible industrial properties must have a buffer installed to prevent potential nuisances when located adjacent to residential or commercial uses. These uses must have access to US Highway 2 or County Hwy 10 without driving through the city so not to require heavy traffic on local streets.

Semi-Public

Semi-public uses are such uses that are generally open to the public and offer a public service to the communities' members and may be owned either publicly and/or privately. These uses include such things as community centers, senior centers, churches, etc.


City of Berthold Land Use - 2019
N
ND HWY2
86THAVENW
ND HWY28
296THSTNW
HIGHSTNW
MAINSTN
NO NAME
ND HWY2
UNKNOWN
UNKNOWN
STEVENSONSTNW
DEWEYST
BERTHOLDSTNE
TYLERSTNE
FOURTHAVENE
THIRDAVENW
THIRDAVENE
BERTHOLDST
TYLERST
AGNESST
FIRSTAVE
CENTRALAVEE
282NDSTSW
72NDAVENW
1STAVESW
1STAVESE
THEILCT
COUNTY HIGHWAY
310THSTNW
72NDAVENW
296THSTNW
282NDSTNW
Legend
City Limits
Land_Use
Commercial
Heavy Commercial
Industrial
Low Density Residential
Medium Density Residential
Public
Semi-Public
Vacant


City of Berthold ET Land Use - 2019
N
100THAVENW
324THSTNW
296THSTNW
ND HWY28
ND HWY2
ND HWY2
86THAVENW
UNKNOWN
282NDSTNW
MAINSTNW
DEWEYST
THIRDAVENE
268THSTNW
72NDAVENW
1STAVESW
310THSTNW
COUNTY 10HWY
62NDAVENW
Legend
ET Land Use
AG
HC
IND
P
RR
City Limits
1-mile ET

Public

Public uses that are developed, built, and/or maintained using public funds. These uses are such things as government buildings and facilities, schools, and parks.

Extraterritorial Land Uses

The City of Berthold has exercised its legal right to adopt extraterritorial jurisdiction (ETJ). Extraterritorial jurisdiction is a state approved extension of a city's land use, subdivision, and or zoning regulations. Cities that have a population of less than five thousand, such as Berthold, are allowed up to one mile of ETJ in all directions of their city limits. The first half mile falls under sole authority of the city's adopted plans and ordinances. The second half mile falls under the joint control of the city and other political subdivisions that have the land use, subdivision and/or zoning authority.

For the purposes of this plan we will focus on the first half mile of Berthold's ETJ. It is important for the city to have the ability to review land uses that are adjacent to city limits in order to assure future growth areas are preserved. It must be the objective of the city to promote agricultural uses in its ETJ until such time that future growth areas are developed.

While the goal of this plan is not to set future land uses for the entirety of the ETJ, it is imperative the city restrict nonconforming uses from being developed in close proximity to the areas designated for future growth. For example, new uses that are industrial in nature should not be allowed to be located adjacent to future residential growth areas. The city must create a zoning ordinance that sets the required setback of such uses.

Rural Residential

The rural residential designation identifies areas currently developed with residential uses. All residential uses that are not directly farm related fall within this designation. The city should not promote rural residential uses until such time that a zoning and

subdivision ordinance is created and adopted that sets minimum standards.

Industrial

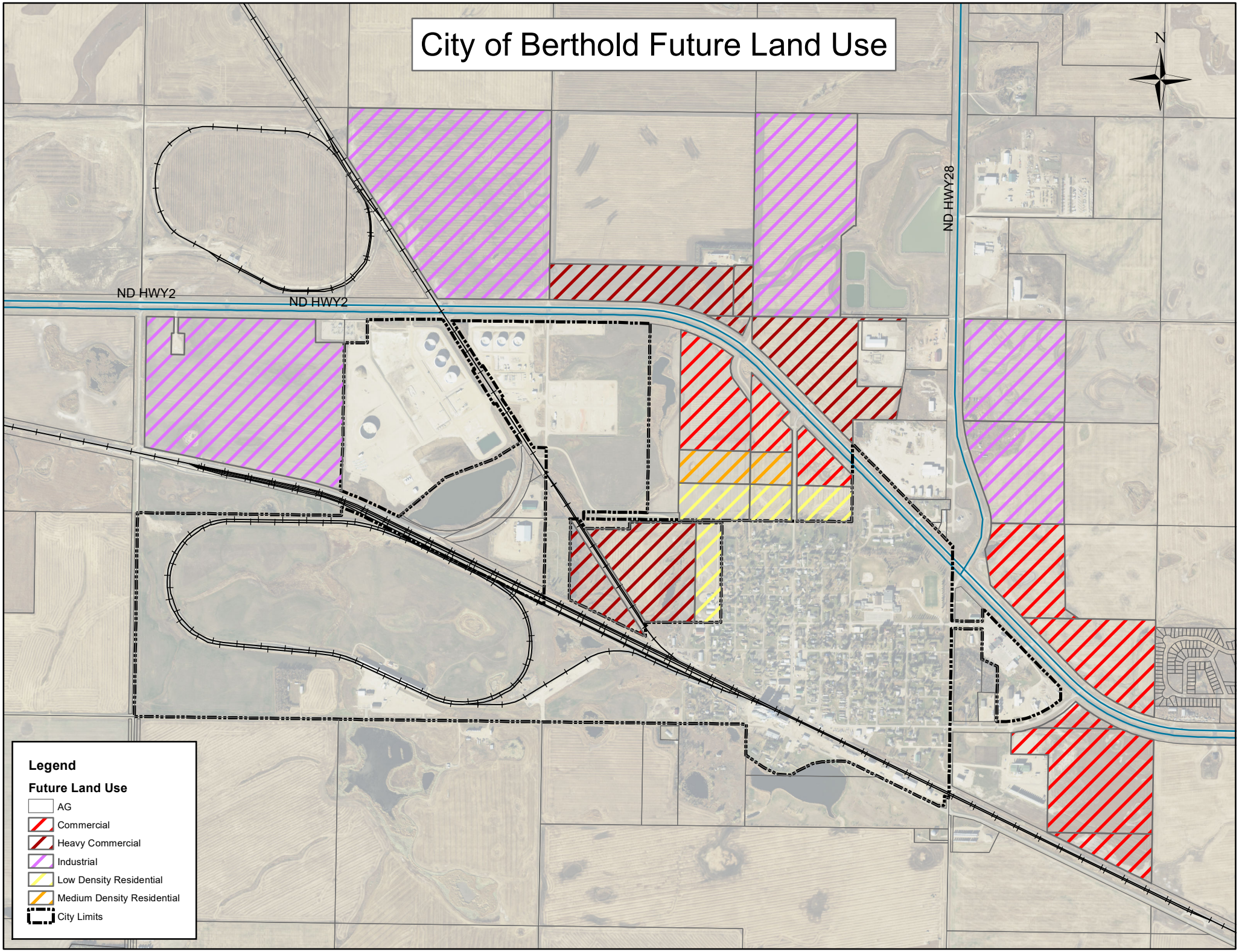
Industrial uses in the ETJ consists of any use other than agriculture or residential. Most of these uses are oil features such as tanks, rail yards, and/or field services with the exception of one agricultural distribution facility. Any new or expanding industrial uses must be reviewed by the city to ensure compatibility with the city's land use plan.

Agriculture

The agricultural designation is reserved for land that is being used for agricultural purposes. All land that is not currently developed should remain agricultural unless otherwise described in this plan.

Public

Public uses include land that is developed, built, and/or maintained using public funds to serve the public. These uses are such things as government buildings and facilities, schools, and parks.


City of Berthold Future Land Use
N
ND HWY2
ND HWY2
ND HWY28
Legend
Future Land Use
AG
Commercial
Heavy Commercial
Industrial
Low Density Residential
Medium Density Residential
City Limits

Chapter 7: Goals, Objectives, and Policies

The goals, objectives, and policy recommendations provide the basic framework on which all decisions shall be based. A goal is defined as a statement that describes in general terms a desired future condition. An objective is a statement that describes a specific future condition to be attained. A policy is a defined course of action or rule of conduct to be used by the city council when making decisions.

The goals, objectives, and policies reflect the ideas, comments and concerns expressed by groups and individuals from the City of Berthold.

The goals, objectives, and policies of this plan have been created to address the Strategic Issues that were identified through public comment and survey responses. The following five (5) elements take into consideration the strategic issues identified in this plan that effect the form, function, and location of future land uses in Berthold.

Housing

Goal 1: The City of Berthold will support reinvestment and redevelopment of residential areas within the existing city limits.

Objective 1: Promote neighborhood revitalization and/or redevelopment and infill development.

Objective 2: Ensure infill development is consistent with the City's goals and objectives spelled out in this plan.

Objective 3: Support reinvestment in existing housing stock.

Objective 4: Encourage reinvestment in and/or redevelopment of properties in disrepair.

Objective 5: Create an incentive package for infill development and/or redevelopment from state programs and local programs.

> *Policy 1*: Use the City of Berthold Comprehensive Plan as the basic policy guide for all community development and redevelopment decisions.
>
> *Policy 2*: Approve development and redevelopment projects only if such projects are consistent with the recommendations of the comprehensive plan.

Short-term Action Items

1) Adopt the City of Berthold Comprehensive Plan.
2) Create and adopt a zoning ordinance that codifies dimensional standards and use types to assure all infill development is compatible with existing residential development.
3) Work with land owners to identify and catalogue properties in existing residential areas that are available for redevelopment and/or infill development.
4) Adopt the Property Tax Exemption for Improvements (NDCC 57-02.2).
5) Reinstate housing incentive program administered by Berthold Economic Development Corporation.
6) Create and adopt a Renaissance Zone Plan.

Long-term Action Items

2) Adopt a property maintenance code to assure proper care of properties to help maintain property values in the City of Berthold.

Goal 2: The City of Berthold will provide well planned, sustainable, and affordable housing options.

Objective 1: Promote housing that is affordable to median income earners.

Objective 2: Encourage a mix of housing types that blend with the existing housing stock.

Objective 3: Encourage housing developments to utilize existing infrastructure where possible and expand infrastructure using Capital Improvements Plan.

Objective 4: Promote housing developments for older individuals and senior citizens.

Policy 1: Use the City of Berthold Comprehensive Plan as the basic policy and land use guide for all community development and redevelopment decisions.

Policy 2: Approve new housing projects only if they are consistent with the recommendations of the comprehensive plan.

Policy 3: Require all new housing to be reviewed and approved by the city prior to construction.

Policy 4: Require consistency in lot sizes for single family residential developments.

Short-term Action Items

1) Adopt the City of Berthold Comprehensive Plan.
2) Create and adopt a zoning ordinance that codifies dimensional standards, minimum and maximum lot sizes and use types.

3) Create a dialog with owners of land shown on the Land Use Plan Map as future development land.
4) Create and adopt Renaissance Zone Plan.
5) Reinstate housing incentive program administered by Berthold Economic Development Corporation.

Long-term Action Items

1) Create and adopt a subdivision ordinance that spells out the process for subdividing new land for development.

Utilities and Infrastructure

Goal 1: To provide public utilities and infrastructure to the citizens of Berthold that are reliable, sustainable and cost effective.

Objective 1: Improve the quality of the existing utility systems and infrastructure when necessary.

Objective 2: Provide quality infrastructure and utility systems to new growth areas without burdening the existing system.

Objective 3: Extend municipal utilities and infrastructure in a fiscally responsible manner.

Objective 4: Provide a safe and well-maintained transportation network for all modes of transportation, including pedestrians.

Objective 5: Come to agreement with North Prairie Rural Water District to assure water availability for new development outside city limits.

Policy 1: Budget for and schedule annual infrastructure repair and/or replacement projects.

Policy 2: Review the land use plan projections of future growth to assure the system(s) can accommodate expansion.

Policy 3: Encourage growth in the near term to locate in areas adjacent to existing utilities to minimize the cost of improvements.

Policy 4: Only allow leap-frog development if developer funds infrastructure extension.

Policy 5: Work with developers in financing of utility and infrastructure improvements so not to put unnecessary burden on city budget.

Short-term Action Items

1) Develop a Capital Improvements Plan that outlines scheduled utility and infrastructure maintenance and identifies timing, location and type of future improvements.
2) Identify areas shown in the Land Use Plan adjacent to city limits that can accommodate growth requiring few infrastructure improvements.
3) Identify infrastructure and utility financing options and look for state and/or federal assistance programs.

Long-term Action Items

1) Monitor and update Capital Improvements Plan.
2) Work with Berthold Public School to create a safe-routes to school plan and apply jointly for improvement funds.
3) Create a subdivision ordinance that sets standards for right-of-way and road surfaces for all land use types.

Agricultural and Cultural Resources

Goal 1: Agricultural land will remain in production until the City of Berthold and land owners reach a mutual agreement to develop land to uses as illustrated in the Land Use Plan.

Objective 1: Create a dialogue with agricultural landowners of land shown as future growth areas focused on the city's future plans for growth.

> *Policy 1*: All agricultural land will remain in production until the land owner agrees with development plans or agrees to sell their land.

Short-term Action Items

1) Hold meeting with individual land owners to discuss the city's plans for growth.

Long-term Action Item

1) Schedule regular meetings with land owners to keep them up to date on the plan's progress.

Economic Development

Goal 1: Improve business climate in the City of Berthold.

Objective 1: Support existing businesses and the development of new businesses by local entrepreneurs.

Objective 2: Support industrial businesses that are involved in the industries representing the

citizens of Berthold.

Objective 3: Work with Souris Basin Planning to create an economic development priority list that will efficiently direct the Berthold Economic Development Council.

Objective 4: Promote the City of Berthold and create an advertising campaign.

Policy 1: Work with existing businesses to improve curb appeal of Main Street.

Policy 2: Support the locally owned businesses in plans for improvements and/or expansion.

Short-term Action Items

1) Create and adopt a Renaissance Zone Plan.
2) Contact Souris Basin Planning to discuss economic development tools administered them that are available to the City of Berthold for commercial and/or industrial projects.
3) Discuss ED goals with Souris Basin Planning and Berthold Economic Development Council.
4) Advertise existing and future commercial and industrial properties available for development.
5) Meet with existing Berthold businesses to discuss the goals of this plan and to discuss their future plans.

Long-term Action Items

1) Meet regularly with Berthold businesses to discuss what the city may do to help improve day-to-day business operations.
2) Establish a long-term marketing plan to brand the City of Berthold as a progressive growing community to attract both businesses and residents.

Goal 2: Redevelop Main Street into a thriving "downtown" and the heart of the City of Berthold.

Objective 1: Support redevelopment and reinvestment efforts in commercial properties through the use of incentive programs.

Objective 2: To identify reinvestment strategies within the core of the city for commercial and residential reinvestment.

Objective 3: To promote Main Street as the commercial core and "downtown" for the City of Berthold.

Policy 1: Promote commercial projects that are located on Main Street.

Policy 2: Only approve projects on Main Street that would be considered retail,

service, hospitality, office, or a mix of commercial and residential.

Policy 3: Do not support the expansion of existing uses on Main Street that are not of the type of use promoted in this plan.

Policy 4: Continually monitor availability of local, regional, state and federal funds for economic development purposes.

Short-term Action Items

1) Create and adopt a Renaissance Zone Plan.
2) Create and adopt a zoning ordinance that spells out the types of uses allowed along Main Street that are compatible with the uses mentioned in this plan.
3) Adopt a non-conforming use(s) ordinance that sets regulations for uses that are currently not compatible with the city's future goals for Main Street.

Long-Term Action Items

1) Create a zoning overlay district that sets standards specific to Main Street for setbacks, parking, signage, landscaping, etc.
2) Monitor and update zoning ordinances to adapt to future needs of the city of Berthold.

Land Use and Future Development

Goal 1: Work with land owners to ensure land is available for projected future city growth.

Objective 1: To work with properties in the city and in future growth areas to ensure land is available for development.

Policy 1: Ensure through long range planning that there is an adequate supply of development land for future uses.

Policy 2; Coordinate land available for development with Capital Improvements Plan to stage development as cost affectively as possible.

Short-term Action Items

1) Conduct review of land available for development.
2) Contact land owners to discuss interest in selling land for development.

Long-term Action Items

1) Continually monitor land available for development.
2) Contact owners of land for future development to discuss timing of future developments.

Goal 2: Provide areas for residential, commercial, and industrial uses within Berthold without land use conflicts.

Objective 1: Ensure any development in and around the city of Berthold is consistent with the City's goals and objectives for land use and community development.

Objective 2: Support the development of well planned residential, commercial, and industrial uses within Berthold.

Objective 3: Support land uses that are compatible with adjacent uses and consistent with the Land Use Plan.

Objective 4: Restrict the construction of oil related facilities (tanks, rigs, raw oil loading facilities, etc.) within the extraterritorial jurisdiction to protect future residential or commercial growth areas.

> *Policy 1*: Use the Land Use Plan as the guide that identifies future development locations.
>
> *Policy2*: Coordinate development with Capital Improvements Plan to ensure efficient use of land to reduce the overall cost of development.

Short-term Action Items

1) Adopt and follow Land Use Plan and Comprehensive Plan goals and objectives prior to approving new and/or infill development projects.
2) Create and adopt a zoning ordinance that sets use, dimensional, and density standards for land within city limits to ensure compatibility of adjacent land uses.

Long-Term Action Items

1) Create a subdivision ordinance that creates a process for subdivision of land prior to development.
2) Update the Land Use Plan to reflect the current conditions in Berthold.

Goal 3: Grow in a contiguous and orderly manner while supporting commercial development along Main Street.

Objective 1: Guide new development, infill and redevelopment projects to areas that can be serviced with utilities and infrastructure in a cost-effective manner.

Objective 2: Support development contiguous to current city limits to avoid leapfrog development.

Objective 3: Support the orderly annexation of land bordering current city limits.

Objective 4: Promote agricultural uses in ET area to concentrate residential development in Berthold to reduce conflict between uses.

Policy 1: Follow the land use plan to guide development to future growth areas starting with land adjacent to city limits.

Policy 2: Annex future growth areas in conjunction with a development proposal in order to extend city services and infrastructure.

Policy 3: Coordinate new development with the city's capital improvements plan.

Policy 4: Coordinate scheduled infrastructure and utility repairs with the extension of services to new development(s).

Short-term Action Plan

1) Adopt Land Use Plan and Comprehensive plan.
2) Educate planning commissioners to review development proposals to assure they are consistent with the plans, objectives and policies of this plan.
3) Review and assess infrastructure and utility condition in areas adjacent to city limits to identify services that can handle additional capacity from new development and areas that need to be repaired or replaced.

Long-term Action Plan

1) Monitor infrastructure condition and review capital improvements plan yearly.

Capital Improvement Plan

Mayor: Steve Ibach

Council: Alechia Neubauer, Travis Sorenson, Troy Enga, Cindy DeBilt, Amy Ones

August 5, 2019

Moore Project No. 20585

Table of Contents

1) INTRODUCTION

The water, sewer, and roadway systems in the City of Berthold were evaluated to help prioritize infrastructure projects for the City to consider completing throughout the next 5 years. The City of Berthold's infrastructure system consists of a water distribution system, sanitary sewer collection and treatment system and residential roads throughout the community. Each systems existing condition was evaluated with improvements recommended based on these evaluations.

The City's drinking water is supplied by the regional rural water system (NAWS) which supplies treated water to the City's 50,000-gallon 4-legged spheroid elevated water tower. There are approximately 26,000 lineal feet of 6" and 8" distribution mains consisting of PVC and asbestos cement pipe. There are individual water service lines and water meters on each user on the system.

The sewage collection system consists of approximately 16,400 lineal feet of 8" and 10" vitrified clay pipe and PVC, which gravity drains to 3 lift stations throughout the community. There is approximately 5,800 lineal feet of force main that convey sewage to different locations throughout the community and to the lagoon system. The existing waste stabilization ponds is a 4-cell system and discharge into an adjacent drainage swale.

The roadway system consists mainly of rural section asphalt streets with Main Avenue having asphalt with curb and gutter. There are a few blocks of rural section gravel streets within the community.

The following capital improvement plan will review the condition of the City's infrastructure and make recommendations for repairs based on the existing conditions.

2) BACKGROUND

a) Purpose of a CIP

The purpose of a Capital Improvement Plan (CIP) is to give the City of Berthold (City) the required information it needs to make informed decisions on how to use public money in the most effective and timely manner to preserve the City's infrastructure and plan for future growth. The CIP will provide the framework for the City to determine the proposed infrastructure improvements needed over the next five or more years. All projects identified within the CIP to address proposed improvements are not commitments by the City to complete the project, but merely a planning tool.

CIP's are not intended to be a basis for design as they are conceptual in nature. Estimated project costs and project financing are at the planning level with the primary purpose of providing means for demonstrating general project scale. As specific projects are prioritized and developed by the City, preliminary engineering reports should be prepared to evaluate the existing conditions, determine design considerations and gather the information required to provide more detailed and accurate project cost estimates.

b) CIP Preparation

Creation of the CIP requires several steps as described below:

1) Identify the existing condition of City infrastructure
2) Identify improvements needed
3) Determine preliminary cost of improvements
4) Project financing and funding
5) Prioritize improvements needed
6) Determine estimated schedule for improvements
7) City to adopt the CIP

1) Identify the Existing Condition of City Infrastructure

The City's infrastructure for this plan will include streets, water, sanitary sewer and storm sewer as requested by the City Council. This included a brief survey of the existing condition of each section of infrastructure.

2) Identify Improvements Needed

After the existing conditions were determined, the Public Works Committee and City Engineer recommended proposed improvements needed. Justification for each improvement recommended was provided by identifying deficiencies found in the existing infrastructure. The proposed improvements recommended include preventative maintenance, expansion, or complete reconstruction of the existing infrastructure, depending on the level of deficiency. Preventative maintenance, if used properly, will help extend the life of the existing infrastructure by using the most cost-efficient means available. Complete reconstruction is only used if the existing infrastructure has deteriorated beyond the point of using preventative maintenance effectively. Expansion of the existing system is used as the City's growth requires it. The City will need to forecast where it believes it may see future growth. Anticipating this growth will be critical in scheduling proposed improvements needed to expand the existing infrastructure.

3) Determine Preliminary Cost of Improvements

Preliminary cost estimates were prepared by the City Engineer for the City to determine the financing necessary for the proposed improvements. The cost estimates were put together in a manner to allow the City to determine the preliminary cost for improvements to specific areas of infrastructure. All preliminary cost estimates are in current dollars and may differ from the future cost of improvements. The estimates will need to be revised due to inflation and as the scope and detail for each improvement progresses to final plans.

4) Project Financing and Funding

Other communities similar to Berthold have financed Capital Improvement Projects with a combination of monies from the City's utility funds, special assessments allocated to benefitting properties, grants from local, state, or federal agencies, and general City funds. At this time, it is assumed that future capital improvement projects will be financed in a similar fashion.

It is recommended for the City to seek funds from programs including but not limited to the State Revolving Loan Fund, USDA Rural Development, Economic Development Authority, and the Community Development Block Grants, which are administered by various state and federal agencies. These programs are helpful in minimizing project costs with their low interest loan and grant dollars. It should be noted that the application process for many of these programs does take time and it is recommended that the City commence the application process for such

programs years in advance of planned construction dates to ensure anticipated timelines can be met.

5) Prioritize Improvements Needed

The schedule of each project is dependent on the priority of the improvements needed. The priority was determined by a process of ranking proposed improvements identified. The City Council then ranked all identified improvements that are needed.

6) Determine Estimated Schedule for Improvements

With the priority identified for each improvement, the City then determined the estimated schedule for each of the improvements. The schedule for improvements set forth in the CIP is only an estimate and may be accelerated or deferred based on available funds, change in priority or other factors.

7) City to Adopt the CIP

A draft CIP was first created under the steps stated above and presented to the City Council on July 1, 2019, which they reviewed and provided feedback on. Those comments were addressed in the plan and a final draft of the CIP was completed. The City Council adopted the final draft CIP for 2020-2025 on August 5, 2019 after all reviews were completed and all comments were addressed. The City should update the CIP on a regular basis to keep the plan current and useful for the future.

3) EXISTING FACILITIES

a) Location Map

A map illustrating the utilities can be found in Appendix A.

b) Condition of Existing Facilities

1) Water Supply

The water is supplied by rural water (NAWS). It is assumed the supply is sufficient in quantity and quality and is not further evaluated in this report.

2) Water Storage

The City's water storage consists of a 50,000 gallon elevated 4-legged spheroid water tower constructed in 1960. The City has a maintenance contract with H&H Coatings, which the last inspection was in October 2016. As part of this contract, H&H Coatings provides a written report on their findings which was reviewed as part of this Capital Improvement Plan. The exterior of the tank was recoated in 2005 but it is unknown if this was an overcoat or if the previous coatings on the tank were removed prior to recoating. It is unknown when exactly the interior coating was applied but it was before 2005. There are rust spots on the interior and the exterior coating is showing signs of wear and even peeling on the logo. Based on the report, the frost jacket needs to be repaired.

Overall, the water tower is in good to fair condition but with information given, it is probable the coatings are near or at the end of their service life. A new exterior coating has a life expectancy of

30 years and a new interior coating has a life expectancy of 20 years. The first overcoat has a life expectancy of 15 years, which each following overcoat with a lesser life expectancy. The proper way to fully assess the condition of the coatings, structure, roof, ladder, safety, or OSHA requirements of the tower, is to hire an independent inspection company to complete a detailed internal and external assessment. These reports can generally be prepared at costs ranging between $5,000 & $10,000 and would offer valuable information on the tank so that your community can make informed decisions. We would recommend that the City have a full inspection performed on the tower by a qualified inspector from KLM Engineering, Scandia Consulting or another company that specializes in this work. Once an inspection is performed, Moore Engineering can provide opinions of cost, life expectancy, grant/loan opportunities, and other information to help City officials make the best long-term decisions for the community.

The size of the water tower is inadequate for providing fire protection. The storage size of the tower should increase at least 3 times to achieve suitable fire flows for a community this size. Before committing to rehabilitating the current tower it is recommended for the City to consider replacing it with a larger one. If the right financing is achieved, the cost difference might be small enough that it would be more beneficial to build a new tower rather than rehabilitate the current one.

3) Water Distribution System

At the time of this report there are 256 water users in the system. There is an estimated 26,000 LF of water main in the system of various materials and sizes. See the following table for details.

Date Installed	Pipe Material	Size (inches)	Approximate Linear Feet
1960	ACP	6	16,300
1982	PVC	6	235
1983	PVC	6	360
1997	PVC	8	3,040
1961-1982	PVC	6	2,470
Post-1960	N/A	N/A	3,580

Summary	
Description	LF
Total 6" ACP	16,300
Total 6" PVC	3,065
Total 8" PVC	3,040
Total Unknown	3,580
Total Water Main	25,985

The 1997 water extension as-builts indicate that the water main on the east end of Rose Avenue was ACP but there is no records to indicate what the rest of the system's pipe material is. Regardless of whether this pipe material is CIP or ACP it has already been nearly 60 years since it was installed. The life expectancy of cast iron pipe is 40-60 years depending on the soil conditions

and ground water. In ideal conditions cast iron pipe can last longer than 60 years. The life expectancy of asbestos cement pipe is 50-70 years also depending on soil conditions. While the City has no record of recent water main issues since 2015, it is likely that the pipe and its appurtenances are near the end of their useful life. Based on discussions with the public works director for the City from 2011 to 2015, water main breaks needed to be addressed during his tenure. In discussions with local contractor, Kemper Construction, who has past experience in working in the City of Berthold, indications were they encountered 4" and 6" asbestos cement pipe when performing work on the City's water mains.

The unknown water main materials likely consist of either PVC or HDPE if it was installed after 1970 but likely ACP if installed in the 1960s as these are the most common pipe materials of that era.

The PVC pipe and appurtenances likely have decades of useful life remaining.

The water meters were installed in 2013. The City has a Badger Orion handheld reading system for their Badger meters. These meters have a 20 year life expectancy.

The following table lists how many gallons of water the City purchased from NAWS and how many gallons the City measured through their meters and sold to the City's residents. It is believed that the difference is water that is lost through slow leaks throughout the system. This lost water is at a cost to the City and does not generate any revenue.

Year	NAWS Total Gallons	Berthold Total Gallons	Berthold Bulk Water Sales	Non-Revenue Total Gallons	Percent of NAWS water that is non-revenue
2017	14,378,720	9,539,717	1,207,707	3,631,296	25.25%
2018	13,631,608	9,949,298	1,562,563	2,119,747	15.55%

4) Sanitary Sewer Collection System

At the time of this report there are 256 users in the system. There is approximately 16,400LF of gravity sewer main and 5,800LF of force main of various sizes and pipe materials. See the following table for details.

Date Installed	Pipe Material	Size (inches)	Approximate Linear Feet	Gravity or Force Main
1958	VCP	8	13,260	Gravity
1958	VCP	10	740	Gravity
1982	PVC	8	247	Gravity
1983	PVC	8	371	Gravity
1997	PVC	10	640	Gravity
1997	PVC	3	1,920	FM
1961-1982	PVC	8	2,350	Gravity
1961-1982	PVC	N/A	360	FM
Post-1960	N/A	8	1,080	Gravity
1977	PVC	6	3,500	FM

Summary	
Description	LF
Total 8" VCP	13,260
Total 10" VCP	740
Total 8" PVC	618
Total 10" PVC	640
Total Unknown Sewer Main	1,080
Total 3" PVC Force main	1,920
Total 6" Force main	3,500
Total Unknown Force main	360
Total Gravity Sewer	16,338
Total Force main	5,780

At the time of this report the City did not have any record of recent sewer main issues. The actual condition of the sewer main is recommended to be verified by using a CCTV camera operated by a professional contractor. VCP is a brittle material prone to cracking and breaking. The gaskets on VCP likely have disintegrated allowing infiltration of silt, sand, and ground water into the pipe. This can cause excessive loads on the treatment system and in severe cases the underground erosion through the pipe joints without a gasket can cause a sinkhole. The deteriorated gaskets would allow the pipe segments to shift causing uneven joints which will inhibit the flow of sewage.

The sanitary sewer manholes should also be inspected to determine if rehabilitation would be required to extend their useful life.

There are three lift stations in the system. Their information is listed below.

1. Rose Ave NE & Tyler Street (primary lift station)
    - Two (2) 5HP pumps.
    - 230V/3phase
    - Pumps are 5-10 years old
    - Contained in a cinder block building
2. St. John's St. and Second Ave
    - Two (2) 5HP pumps
    - 230V/3phase
    - Pumps are 20-22 year old
3. Near Cenex gas station along Highway 2 on east edge of town
    - Two (2) 3.5HP grinder pumps
    - 230V / single phase
    - Pumps are less than 5 years old

Lift stations require routine maintenance and monitoring. The expected life of the pumps is 15-20 years. The building at the primary lift station was built around 1958 and needs improvements such as new paint and roof repair and maybe more.

The City records the pump run times in the lift station and the records go back to the beginning of 2016. By calibrating the pumps Moore Engineering was able to estimate the total flow through the lift stations. According the Environmental Protection Agency, a system with a daily flow over 120 GPM per capita is considered to have excessive infiltration and inflow (I/I). Moore Engineering estimates the average monthly flow since the beginning of 2016 to be about 90 GPM per capita. Therefore, Berthold would not be considered to have excessive infiltration and inflow. However, excessive I/I should be evaluated during the wettest months and years. This data may be lacking.

5) Sanitary Sewer Treatment System

The City uses waste stabilization ponds to treat the wastewater. The system was expanded in 2014 to serve a design population of 888. The current population is estimated to be 450 to 550. Due to the recent evaluation and expansion done on this system it is assumed to be in good condition. The treatment volume capacity of the primary cell is 7,302,000 gallons. Together with the secondary ponds the total treatment volume is 14,546,000. Using the lift station pump run times the volume of sewage sent to the ponds was calculated for an approximate 180 storage period between May 15 and November 15. The results are shown in the following table. The treatment system storage is sufficient for the City's current needs.

Period	Total Gallons
5/16/2016 - 11/15/2016	5,994,695
11/15/2016 - 5/5/2017	N/A
5/5/2017 - 11/13/2017	6,064,110
11/13/2017 - 5/22/2018	

	5,448,046
5/22/2018 - 11/14/2018	6,431,797
11/13/2018 - 5/8/2019	4,851,505

6) Storm Sewer System and Surface Water Drainage

The City does not have any storm sewer pipe. Most of the roadways are rural sections without curb and gutter so the storm water is conveyed via ditches.

Main Street does have existing curb and gutter. However, most of the intersections with the Avenues are lacking concrete valley gutters. Concrete valley gutters are recommended over asphalt swales since asphalt is more susceptible to deterioration from the channelized water flow off the curb and gutter.

Some other roadways without curb and gutter have shallow or perhaps no ditch at all. The lack of adequate drainage along the road can allow the surface water to seep into the soil and saturate the subgrade under the road. This weakens the stability of the roadway and shortens the life of the pavement. In areas where a ditch is no longer practical it is recommended to reconstruct the street using curb and gutter. When converting the street section to curb and gutter, storm sewer should be considered if sufficient grading for drainage can't be achieved with the curb and gutter.

7) Roadways

The roadways are either asphalt or gravel. The majority of the asphalt streets were paved between years 1990-2000. The streets to the school were believed to be paved prior to that. A street survey was completed by Moore Engineering in May 2019 using the PASER scale which is a 1-10 rating system for road condition developed by the University of Wisconsin-Madison Transportation Information Center. The map can be found in Appendix A. Generally speaking, any streets with a rating of 1-3 would require a full reconstruct. Streets rated 4 and 5 may be needing a mill and overlay. Streets rated 6-10 are recommended to have a seal coat and other routine maintenance in order to extend the life of the pavement.

4) CAPITAL IMPROVEMENTS

a) Project Summary

The following table is a listing of the propose

d projects contained within this CIP. The table includes estimated projects costs.

Estimated Year Needed	Name of Project	Engineer's Opinion of Cost (2019 Dollars)
2020	CCTV Inspection of Sewers	$85,000
2020	Chip Seal, Crack Seal, Crack Repair Asphalt Roads	$190,000
2020	Street Reconstruction (Blocks without underground utilities)	$410,000
2020	3rd Party Water Tower Inspection	$10,000
2021	Lift Station Pumps and Controls and Building Improvements	$100,000
2022	Water Tower Rehabilitation	$100,000-$250,000
2023	City-Wide Water, Sewer, and Street Improvement	$6,831,000

b) Map

Maps showing the project locations can be found in the Appendix B.

CAPITAL IMPROVEMENT PLAN

Project Year	2020
Total Project Cost	$85,000

DURATION: 2020 (YEAR) thru 2025 (YEAR)

PRIORITY: HIGH

PROJECT NAME: CCTV Inspection of Sewers

DESCRIPTION

Clean and televise sanitary sewer mains to inspect pipe integrity.

JUSTIFICATION

Televising will help estimate how much service life is remaining in the pipe and what action would be recommended before doing any street work to ensure the pipe will last at least as long as the road if any roadway improvements are done.

PROJECT FINANCING

ITEM	GRANT FUNDS	FINANCING	TOTAL
TOTAL			

LOCATION MAP

CAPITAL IMPROVEMENT PLAN

Project Year	2020
Total Project Cost	$190,000

DURATION: 2020 (YEAR) thru 2025 (YEAR) PRIORITY: HIGH

PROJECT NAME: Chip Seal, Crack Seal, Crack Repair Asphalt Roads

DESCRIPTION

Road maintenance work such as chip sealing, crack sealing, and crack repairs.

JUSTIFICATION

This work is an economical way to extend the life of asphalt pavement.

PROJECT FINANCING

ITEM	GRANT FUNDS	FINANCING	TOTAL
TOTAL			

LOCATION MAP

CAPITAL IMPROVEMENT PLAN

Project Year	2020
Total Project Cost	$410,000

DURATION: 2020 (YEAR) thru 2025 (YEAR) PRIORITY: HIGH

PROJECT NAME: Street Reconstruction (Blocks without underground utilities)

DESCRIPTION

Street Reconstruction (Blocks without underground utilities)

JUSTIFICATION

These streets have deteriorated to the point of needing full reconstruction or resurfacing. There are no underground utilities to consider on these streets so there is no risk of a new street needing to be excavated to repair an old utility.

PROJECT FINANCING

ITEM	GRANT FUNDS	FINANCING	TOTAL
TOTAL			

LOCATION MAP

CAPITAL IMPROVEMENT PLAN

Project Year	2020
Total Project Cost	$10,000

DURATION: 2020 (YEAR) thru 2025 (YEAR) PRIORITY: HIGH

PROJECT NAME: 3rd Party Inspection of Water Tower

DESCRIPTION

Hiring a firm to inspect, evaluate, and recommend improvements to water tower.

JUSTIFICATION

Getting an expert's opinion on what action to take to preserve the water tower will ensure the City is spending their money wisely.

PROJECT FINANCING

ITEM	GRANT FUNDS	FINANCING	TOTAL
TOTAL			

LOCATION MAP

CAPITAL IMPROVEMENT PLAN

Project Year	2021
Total Project Cost	$100,000

DURATION: 2020 (YEAR) thru 2025 (YEAR)

PRIORITY: MEDIUM

PROJECT NAME: Lift Station Pumps and Controls

DESCRIPTION

Replacing two pumps in a lift station and replacing controls for all three lift stations and rehabilitating the building at the primary lift station.

JUSTIFICATION

The pumps will likely be worn out by this time and needing replacement. The controls are outdated and could be replaced. Depending on the needs of the City, these controls may not be needing replacement or maybe could be replaced with a cheaper or more expensive option.

PROJECT FINANCING

ITEM	GRANT FUNDS	FINANCING	TOTAL
TOTAL			

LOCATION MAP

CAPITAL IMPROVEMENT PLAN

Berthold North Dakota

Project Year	2022
Total Project Cost	$100,000-$250,000

DURATION: 2020 (YEAR) thru 2025 (YEAR)

PRIORITY: MEDIUM

PROJECT NAME: Water Tower Rehabilitation

DESCRIPTION

Applying coatings and make any OSHA upgrades and structural repairs necessary to maintain the tower. The exact scope of what work is needed requires further study thus there is a wide range of cost.

JUSTIFICATION

Maintaining the water tower's integrity with new coatings can extend the life of the structure indefinitely. There is already rust forming inside the tower from the lack of coatings so there indicating an immediate need of new coatings.

PROJECT FINANCING

ITEM	GRANT FUNDS	FINANCING	TOTAL
TOTAL			

LOCATION MAP

CAPITAL IMPROVEMENT PLAN

Project Year	2023
Total Project Cost	$6,831,000

DURATION: 2020 (YEAR) thru 2025 (YEAR)

PRIORITY: MEDIUM

PROJECT NAME: City-Wide Water, Sewer, and Street Improvement

DESCRIPTION

Improvements to the water distribution system and wastewater collection system and resurfacing all the asphalt roads over the water and sewer.

JUSTIFICATION

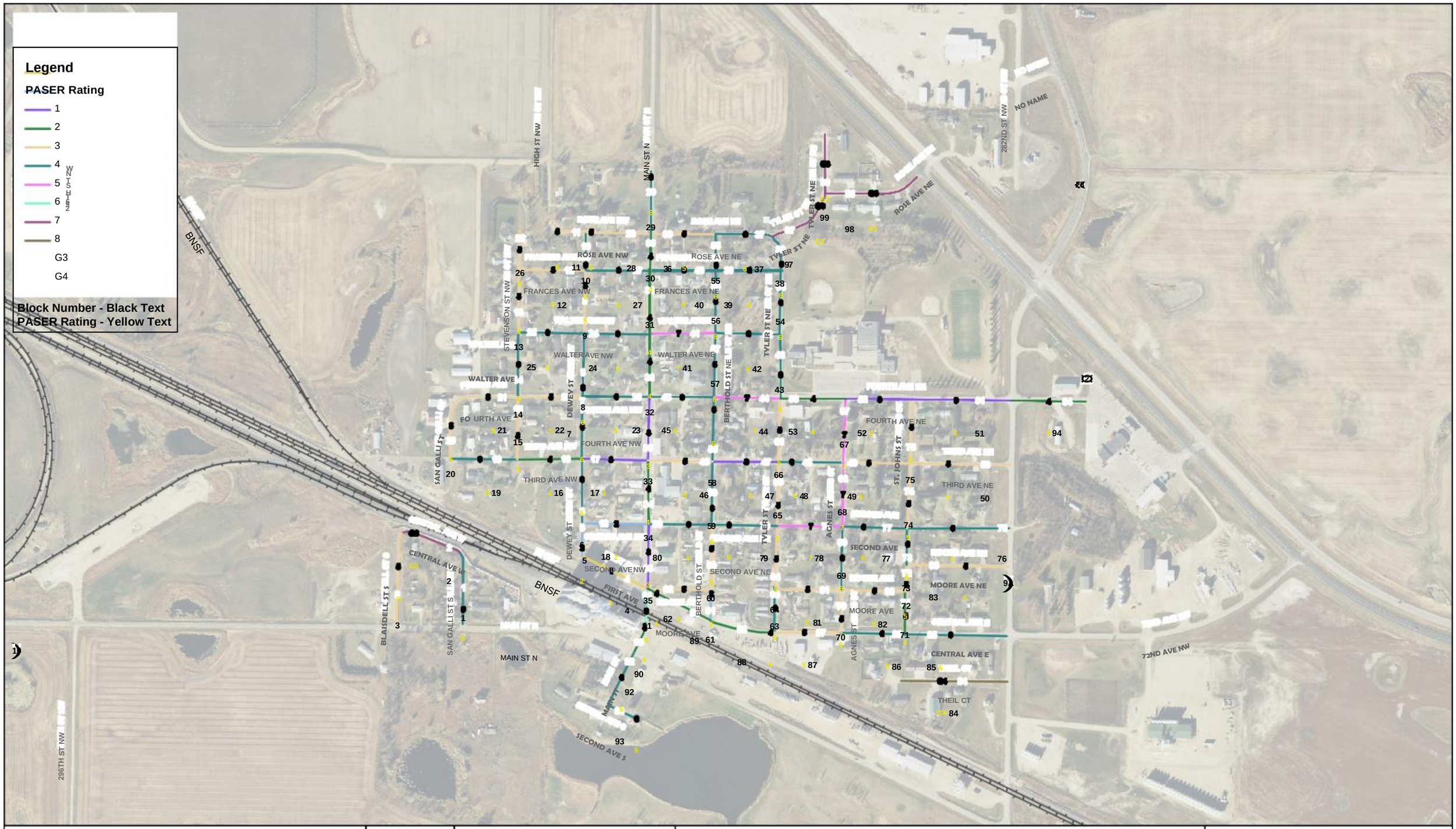
It is predicted that most or all the asphalt roadways over utilities will need resurfacing near this date. The underground utilities are not expected to last as long as resurfaced roads so it would be prudent to replace those utilities prior to resurfacing the roads.

PROJECT FINANCING

ITEM	GRANT FUNDS	FINANCING	TOTAL
TOTAL			

LOCATION MAP

APPENDIX A



STREET SURVEY
BERTHOLD, NORTH DAKOTA

N W E S

0 250 500 1,000 Feet

moore engineering, inc.

Plotted By: tanner.schmidt Parcel Date: N/A Aerial Image: 2018 County NAIP SIDS Elevation Data: Lidar Horizontal Datum: NAD 1983 StatePlane North Dakota North FIPS 3301 Feet Vertical Datum: NAVD1988 T:\Projects\20500\20585\20585\20585_Berthold_Street_Survey.mxd

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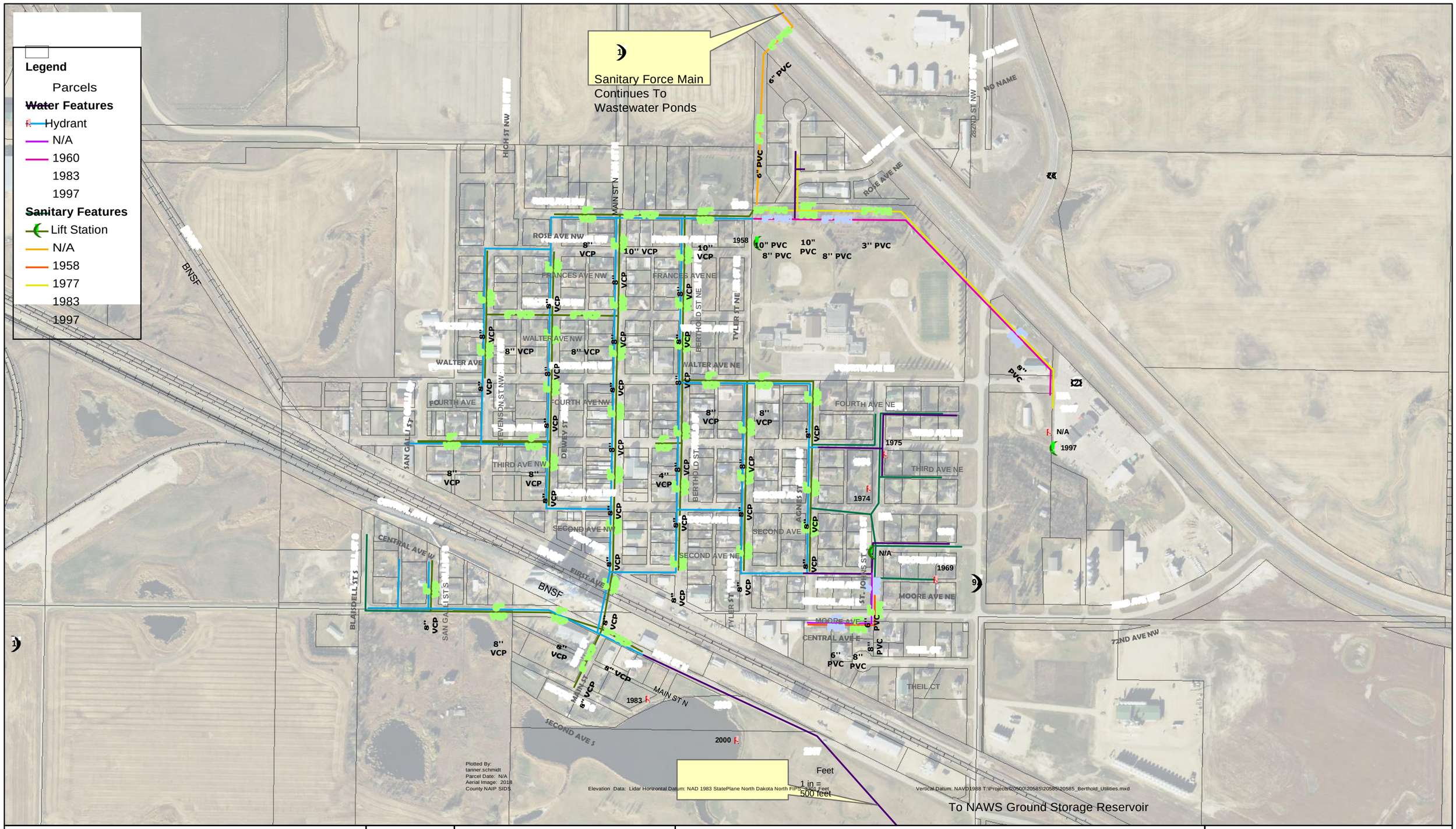
1 in = 500 feet



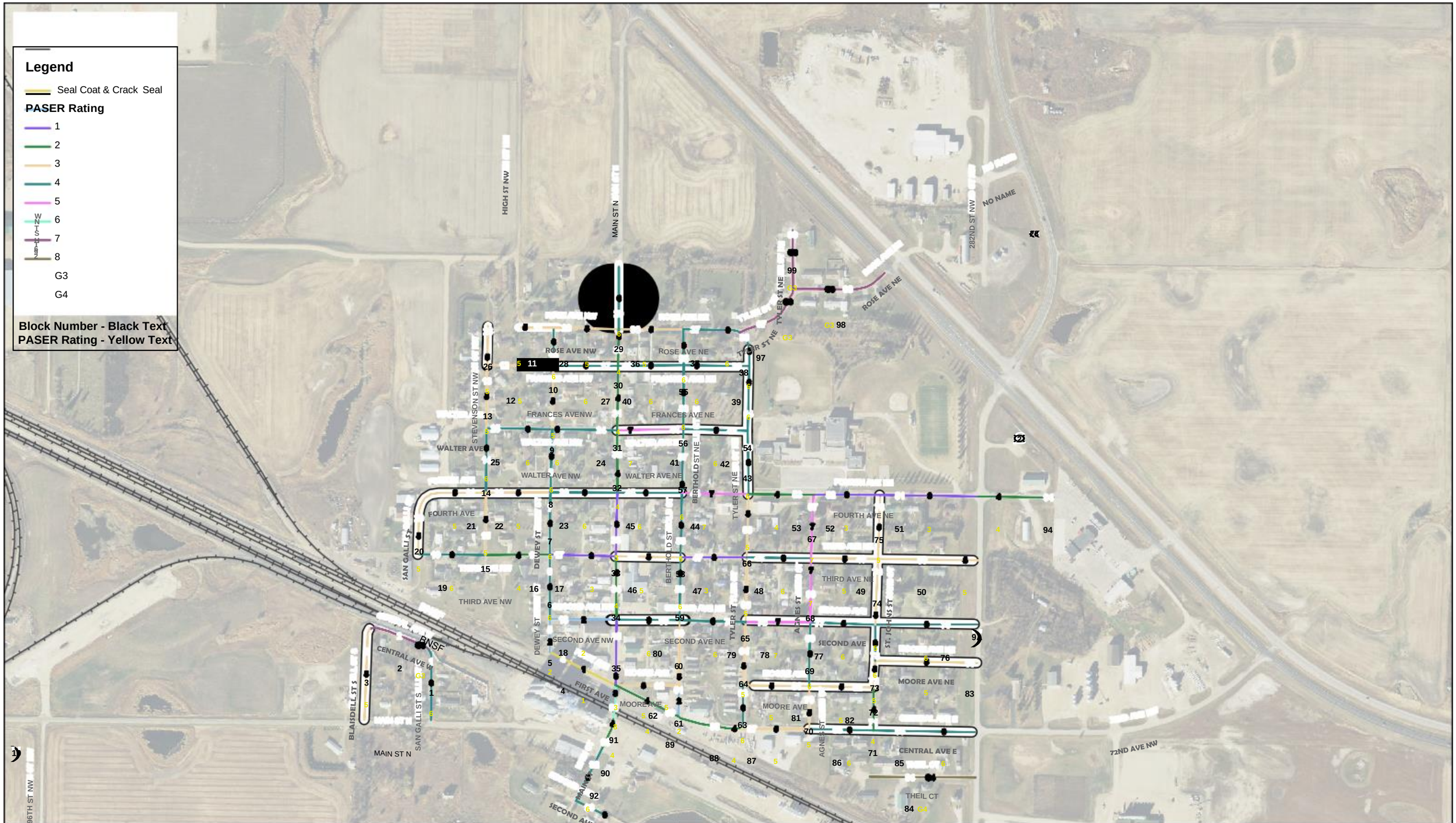
CITY OF BERTHOLD
UTILITY CAPITAL IMPROVEMENT PLAN
WARD COUNTY, NORTH DAKOTA

moore engineering, inc.

Created By: TJS Date Created: 05/28/19 Date Saved: 06/28/19 Date Plotted: NEVER Date Exported: 06/28/19

2007 R

APPENDIX B



SEAL COAT & CRACK SEAL
BERTHOLD, NORTH DAKOTA

N W E S

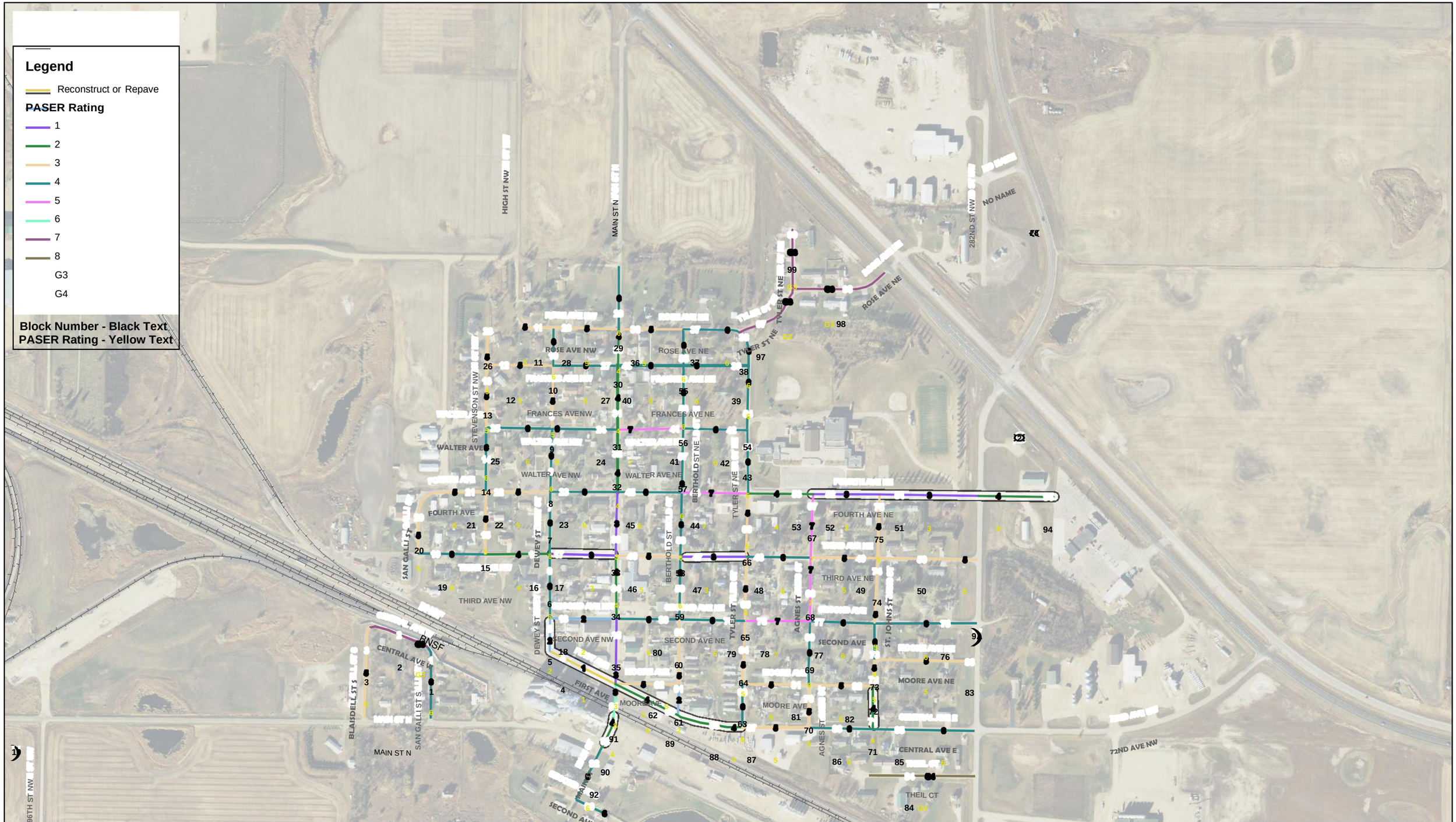
0 250 500 1,000
Feet

Plotted By: tanner.schmidt Parcel Date: N/A Aerial Image: 2018 County NAIP SIDS Elevation Data: Lidar Horizontal Datum: NAD 1983 StatePlane North Dakota North FIPS 3301 Feet Vertical Datum: NAVD1988
T:\Projects\20500\20585\20585\20585_Berthold_Street_Seal_Crack_Coat.mxd

moore engineering, inc.

Created By: TJS Date Created: 05/29/19 Date Saved: 07/09/19 Date Plotted: NEVER Date Exported: 07/09/19

1 in = 500 feet



RECONSTRUCT OR REPAVE
STREETS WITHOUT UNDERGROUND UTILITIES
BERTHOLD, NORTH DAKOTA

N
W E
S

Plotted By: tanner.schmidt
Parcel Date: N/A
Aerial Image: 2018 County

NAIP SIDS
T:\Projects\20500\20585\20585\20585_Berthold_Streets_Without_Underground_Utilities.mxd

Elevation Data: Lidar Horizontal Datum: NAD 1983 StatePlane North Dakota North FIPS 3301 Feet

Vertical Datum: NAVD1988

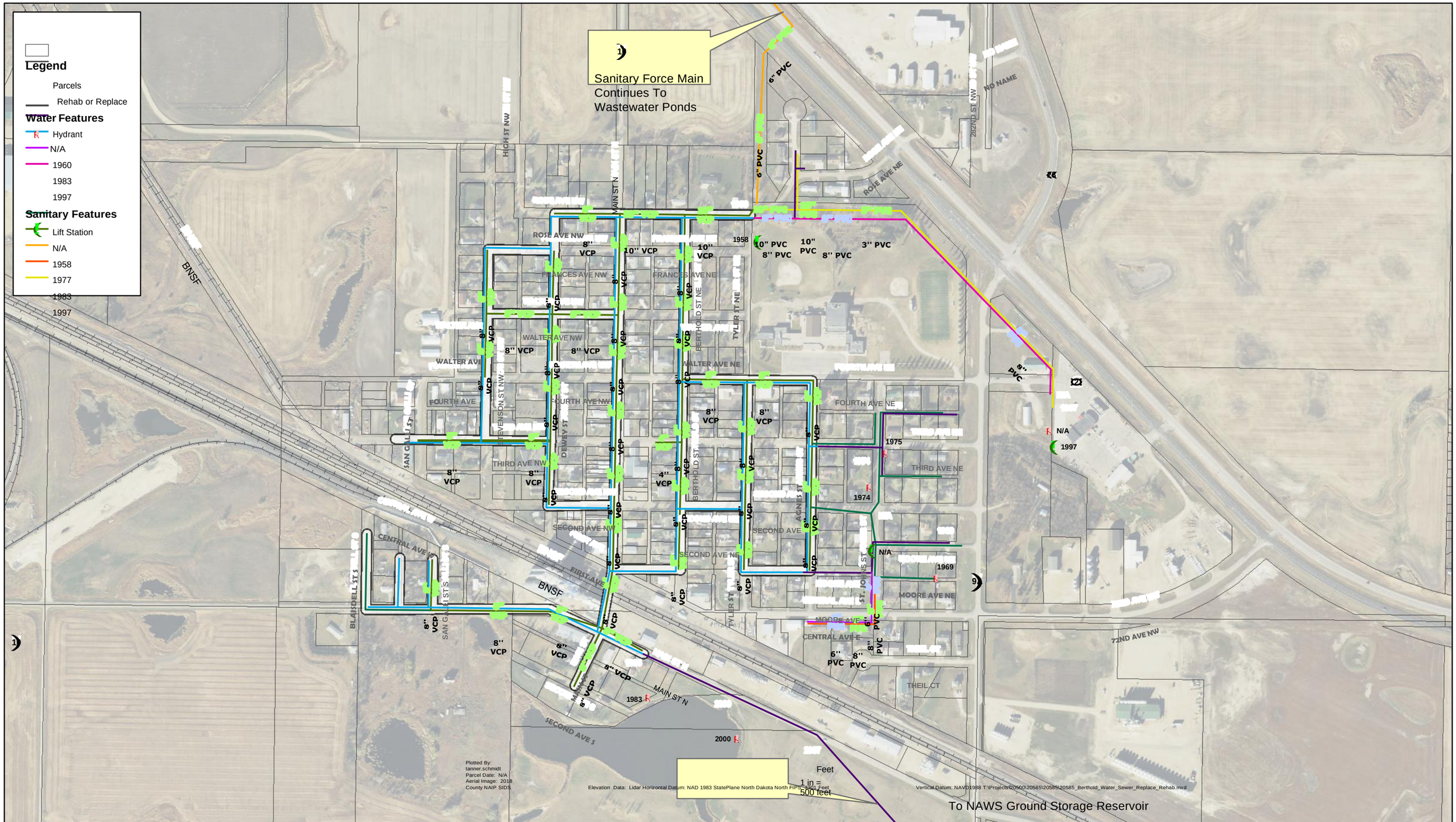
moore engineering, inc.

Created By: TJS Date Created: 05/29/19 Date Saved: 07/01/19 Date Plotted: NEVER Date Exported: 07/09/19

0 250 500 1,000

Feet

1 in = 500 feet



SEWER & WATER - REHAB/REPLACE
UTILITY CAPITAL IMPROVEMENT PLAN
BERTHOLD, NORTH DAKOTA

N W E S

0 250

500

1,000

moore engineering, inc.

Created By: TJS Date Created: 05/28/19 Date Saved: 07/01/19 Date Plotted: NEVER Date Exported: 07/01/19

2007 R.

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